**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A thermal barrier coating composition comprising 46-97 molar percent base oxide, 2-25 molar percent primary stabilizer, 0.5-25 molar percent group A dopant, and 0.5-25 molar percent group B dopant, said base oxide being selected from the group consisting of $ZrO_2$, $HfO_2$ and combinations thereof, said primary stabilizer being selected from the group consisting of $Y_2O_3$, $Dy_2O_3$, $Er_2O_3$ and combinations thereof, ~~said group A dopant being selected from the group consisting of rare earth oxides, alkaline earth metal oxides, transition metal oxides and combinations thereof, and~~ said group B dopant being selected from the group consisting of $Nd_2O_3$, $Sm_2O_3$, $Gd_2O_3$, $Eu_2O_3$ and combinations ~~there~~ thereof, and said group A dopant being selected from the group consisting of rare earth oxides, alkaline earth metal oxides, transition metal oxides and combinations thereof, but excluding those species contained in said base oxide, group B dopant and primary stabilizer groups,

wherein the ratio of the molar percentages of group A dopant to group B dopant in said composition is between about 1:8 and about 8:1.

2. (original) A thermal barrier coating composition according to claim 1, wherein the group A dopant is selected from the group consisting of $Sc_2O_3$, $Yb_2O_3$,

MgO, NiO, $Cr_2O_3$, CoO, $Fe_2O_3$, $TiO_2$, $RuO_2$, $Ta_2O_5$, and combinations thereof.

3. (original) A thermal barrier coating composition according to claim 1, wherein the group A dopant and the group B dopant are present in the composition in substantially equal molar percentages.

4. (currently amended) A thermal barrier coating composition according to claim 1, wherein the ratio of the molar percentages of group A dopant to group B dopant is between about ~~1:8 and 8:1~~ 1:4 and about 4:1.

5. (currently amended) A thermal barrier coating composition according to claim 1, wherein the ratio of the molar percentage of the primary stabilizer to the sum of the molar percentages of the ~~Group~~ group A dopant and the ~~Group~~ group B dopant is between 1:1 and 10:1.

6. (currently amended) A thermal barrier coating composition according to claim 1, said composition being a ceramic alloy solid solution having a zirconia or hafnia lattice structure or structures, wherein the ionic radius of the group A dopant cation is smaller than the ionic radius of the primary stabilizer ~~oxide~~ cation ~~or the base oxide cation~~ in said ceramic alloy solid solution.

7. (canceled).

8. (currently amended) A thermal barrier coating composition comprising 46-97 molar percent base oxide, 2-25 molar percent primary stabilizer, 0.5-12.5 molar percent group A dopant, and 0.5-12.5 molar percent group B dopant, said base oxide being selected from the group consisting of $ZrO_2$, $HfO_2$ and combinations thereof, said primary stabilizer being selected from the group consisting of $Y_2O_3$, $Dy_2O_3$, ~~and~~ $Er_2O_3$ and combinations thereof, ~~said group A dopant being selected from the group consisting of rare earth oxides, alkaline earth metal oxides, transition metal oxides and combinations thereof, and~~ said group B dopant being selected from the group consisting of $Nd_2O_3$, $Sm_2O_3$, $Gd_2O_3$, $Eu_2O_3$ and combinations thereof, and said group A dopant being selected from the group consisting of rare earth oxides, alkaline earth metal oxides, transition metal oxides and combinations thereof, but excluding those species contained in said base oxide, group B dopant and primary stabilizer groups,

wherein the ratio of the molar percentages of group A dopant to group B dopant in said composition is between about 1:8 and about 8:1.

9. (original) A thermal barrier coating composition according to claim 8, wherein the group A dopant is selected from the group consisting of $Sc_2O_3$, $Yb_2O_3$, MgO, NiO, $Cr_2O_3$, CoO, $Fe_2O_3$, $TiO_2$, $RuO_2$, $Ta_2O_5$, and combinations thereof.

10. (original) A thermal barrier coating composition according to claim 8, wherein the group A dopant and the group B dopant are present in the composition

in substantially equal molar percentages.

11. (currently amended) A thermal barrier coating composition according to claim 8, wherein the ratio of the molar percentages of group A dopant to group B dopant is between about ~~1:8 and 8:1~~ 1:4 and about 4:1.

12. (currently amended) A thermal barrier coating composition according to claim 8, wherein the ratio of the molar percentage of the primary stabilizer to the sum of the molar percentages of the ~~Group~~ group A dopant and the ~~Group~~ group B dopant is between 1:1 and 10:1.

13. (currently amended) A thermal barrier coating composition according to claim 8, said composition being a ceramic alloy solid solution having a zirconia or hafnia lattice structure or structures, wherein the ionic radius of the group A dopant cation is smaller than the ionic radius of the primary stabilizer ~~oxide~~ cation ~~or the base oxide cation~~ in said ceramic alloy solid solution.

14. (canceled).

15. (canceled).

16. (currently amended) A thermal barrier coating composition comprising

46-97 molar percent base oxide, 2-25 molar percent primary stabilizer, and 0.5-25 molar percent each of ~~a compound~~ at least two compounds selected from the group consisting of group A dopants and group B dopants, said base oxide being selected from the group consisting of $ZrO_2$, $HfO_2$ and combinations thereof, said primary stabilizer being selected from the group consisting of $Y_2O_3$, $Dy_2O_3$, and combinations thereof, ~~said group A dopant, if present, being selected from the group consisting of rare earth oxides other than $Er_2O_3$, alkaline earth metal oxides, transition metal oxides and combinations thereof, and~~ said group B dopant~~, if present,~~ being selected from the group consisting of $Nd_2O_3$, $Sm_2O_3$, $Gd_2O_3$, $Eu_2O_3$ and combinations thereof, and said group A dopant being selected from the group consisting of rare earth oxides other than $Er_2O_3$, alkaline earth metal oxides, transition metal oxides and combinations thereof, but excluding those species contained in said base oxide, group B dopant and primary stabilizer groups.

17. (currently amended) A thermal barrier coating composition according to claim 16, wherein the group A dopant~~, if present,~~ is selected from the group consisting of $Yb_2O_3$, $Sc_2O_3$, MgO, NiO, $Cr_2O_3$, CoO, $Fe_2O_3$, $TiO_2$, and $RuO_2$.

18. (currently amended) A thermal barrier coating composition according to claim 16, said composition being a ceramic alloy solid solution having a zirconia or hafnia lattice structure or structures, wherein the ionic radius of the group A dopant cation~~, if present,~~ is smaller than the ionic radius of the primary stabilizer ~~oxide~~

cation ~~or the base oxide cation~~ in said ceramic alloy solid solution.

19. (canceled)

20. (currently amended) A thermal barrier coating composition according to claim 16, wherein the ratio of the molar percentage of the primary stabilizer to the sum of the molar ~~percentage~~ percentages of the ~~Group~~ group A dopant ~~or~~ and the ~~Group~~ group B dopant is between 1:1 and 10:1.

21. (new) A thermal barrier coating composition according to claim 1, wherein the ratio of the molar percentages of group A dopant to group B dopant is between about 1:2 and about 2:1.

22. (new) A thermal barrier coating composition according to claim 1, wherein the ratio of the molar percentages of group A dopant to group B dopant is between about 1.5:1 and about 1:1.5.

23. (new) A thermal barrier coating composition according to claim 1, wherein the ratio of the molar percentages of group A dopant to group B dopant is between about 1.1:1 and about 1:1.1.

24. (new) A thermal barrier coating composition according to any one of

claims 4, 21, 22 or 23, wherein the group A dopant is selected from the group consisting of $Sc_2O_3$, $Yb_2O_3$, MgO, NiO, $Cr_2O_3$, CoO, $Fe_2O_3$, $TiO_2$, $RuO_2$, $Ta_2O_5$, and combinations thereof.

25. (new) A thermal barrier coating composition according to any one of claims 4, 21, 22 or 23, said composition being a ceramic alloy solid solution having a zirconia or hafnia lattice structure or structures, wherein the ionic radius of the group A dopant cation is smaller than the ionic radius of the primary stabilizer cation in said ceramic alloy solid solution.

26. (new) A thermal barrier coating composition according to any one of claims 1, 4, 21, 22 or 23, said group A dopant being $Yb_2O_3$, $Sc_2O_3$ or a mixture thereof.

27. (new) A thermal barrier coating composition according to any one of claims 1, 4, 21, 22 or 23, said group A dopant being $Yb_2O_3$, $TiO_2$, $Ta_2O_5$ or a mixture thereof.

28. (new) A thermal barrier coating composition according to any one of claims 1, 4, 8, 21, 22 or 23, said base oxide being $ZrO_2$, said group A dopant being $Yb_2O_3$, said group B dopant being $Gd_2O_3$, and said primary stabilizer being $Y_2O_3$.

29. (new) A thermal barrier coating composition according to claim 1, comprising 1.5-5 molar percent group A dopant and 1.5-5 molar percent group B dopant.

30. (new) A thermal barrier coating composition according to any one of claims 1, 4, 21, 22 or 23, said group A and group B dopants each being selected to have a high free energy of formation such that each of said group A and group B dopants exhibits high stability in an oxygen-containing atmosphere.

31. (new) A thermal barrier coating composition according to any one of claims 1, 4, 8, 16, 21, 22 or 23, said group A and group B dopants being selected to provide a mixture of dopants effective to promote complex defect structures and improved lattice scattering in said thermal barrier coating composition.

32. (new) A thermal barrier coating composition comprising a ceramic alloy solid solution having a base oxide lattice structure or structures where the base oxide is present in the solid solution in an amount of 46-97 molar percent, the solid solution further comprising 2-25 molar percent primary stabilizer, 0.5-25 molar percent group A dopant, and 0.5-25 molar percent group B dopant, said base oxide being selected from the group consisting of $ZrO_2$, $HfO_2$ and combinations thereof, said primary stabilizer being selected from the group consisting of $Y_2O_3$, $Dy_2O_3$, $Er_2O_3$ and combinations thereof, each of said group A dopant and said group B

dopant being selected from the group consisting of rare earth oxides, alkaline earth metal oxides, transition metal oxides and combinations thereof, but excluding those species contained in said base oxide and primary stabilizer groups,

wherein said group A dopant is selected such that the ionic radius of the group A dopant cation is smaller than the ionic radius of the primary stabilizer cation in said solid solution,

and wherein said group B dopant is selected such that the ionic radius of the group B dopant cation is larger than the ionic radius of the primary stabilizer cation in said solid solution,

the ratio of the molar percentages of group A dopant to group B dopant in said solid solution being between about 1:8 and about 8:1.

33. (new) A thermal barrier coating composition according to claim 32, wherein the ratio of the molar percentages of group A dopant to group B dopant in said solid solution is between about 1:4 and about 4:1.